

**U.S. Department of Energy**  
**Washington, D.C.**

**ORDER**

**DRAFT**  
**DOE O 471.X**

Approved: XX-XX-03  
Expires: XX-XX-07

**SUBJECT: CONTROL OF AND ACCESS TO NUCLEAR WEAPON DATA**

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1. OBJECTIVES.

- a. To establish Department of Energy (DOE) and National Nuclear Security Administration (NNSA) management requirements and responsibilities for the physical control of and access to nuclear weapon data (NWD) to ensure the common defense and national security.
- b. To define the Sigma numbering system used to categorize and label NWD.
- c. To establish the designation Sigma 20 to identify improvised nuclear device concepts and designs.

NOTE: This Order pertains only to the access, control, and dissemination of classified material categorized as Restricted Data (RD) and Formerly Restricted Data (FRD) in the atomic weapons program, also known as NWD. NWD always concerns the design, manufacture, or utilization of nuclear weapons.

NNSA is responsible for establishing policy for the control and dissemination of RD and FRD. The RD category of information was created by the Atomic Energy Act of 1954, as amended, [42 United States Code (U.S.C.) 2014 (y)] to protect data on atomic weapon design and utilization, special nuclear material production, and special nuclear material used in the production of energy.

2. CANCELLATIONS. This Order cancels DOE 5610.2, Control of Weapon Data, dated 8-1-80. Cancellation of a directive does not, by itself, modify or otherwise affect any contractual obligation to comply with the directive. Canceled directives that are incorporated by reference in a contract remain in effect until the contract is modified to delete reference to the requirements in the canceled directives.

3. APPLICABILITY.

- a. DOE Elements. This Order applies to all DOE and NNSA elements (see Attachment 1).
- b. Site/Facility Management Contractors.

- (1) The Contractor Requirements Document (CRD), Attachment 2, sets forth requirements of this Order that will apply to site/facility management contractors whose contracts include the CRD.

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All Departmental Elements

**INITIATED BY:**  
Classified and Controlled Information Division

- (2) This CRD must be included in all site/facility management contracts that require or involve access to NWD.
- (3) This Order does not automatically apply to other than site/facility management contractors. Any application of requirements of this Order to other than site/facility management contractors will be communicated separately.
- (4) Heads of Headquarters elements are responsible for telling contracting officers which site/facility management contractors are affected by this Order. Once notified, the contracting officer is responsible for incorporating the CRD into each affected site/facility management contract via the laws, regulations, and DOE directives clause of the contracts.
- (5) As the laws, regulations, and DOE directives clause of site/facility management contracts states, regardless of the performer of the work, a site/facility management contractor with a CRD incorporated into its contract is responsible for compliance with the requirements of the CRD.
  - (a) Affected site/facility management contractors are responsible for flowing down the requirements of the CRD to subcontractors at any tier to the extent necessary to ensure the site/facility management contractors' compliance with the requirements of this Order.
  - (b) Contractors must not flow down requirements to subcontractors unnecessarily or imprudently. That is, contractors will—
    - 1 ensure that they and their subcontractors comply with the requirements of the CRD and
    - 2 incur only costs that would be incurred by a prudent person in the conduct of competitive business.

c. Exclusions. None.

#### 4. REQUIREMENTS.

- a. After the approval date of this Order, all NWD must be marked with the appropriate Sigma category as specified in this Order (see Attachment 3) and in DOE M 471.X-Y, *Control of and Access to Nuclear Weapon Data*, dated XX-XX-03. This includes NWD that—
  - (1) originated in DOE or NNSA,

- (2) is identified and/or retained in any DOE or NNSA organization, or
  - (3) is transmitted to another Government department or agency, a non-Government organization, or a Government contractor.
- b. The following exceptions apply.
  - (1) NWD that is inactive when this Order is approved does not require review or re-marking for as long as it remains inactive.
  - (2) Inactive NWD that is accessed infrequently for purposes such as inventory will continue to be considered inactive.
- c. When inactive NWD is retrieved for use, it must be reviewed and re-marked in accordance with the requirements of this Order and DOE M 471.X-Y.
- d. All NWD documents<sup>1</sup> that are to be transmitted to the Department of Defense (DoD) also must be marked as Critical Nuclear Weapons Design Information, if required by criteria established by DoD.
- e. Only individuals who have appropriate clearance and valid need to know are permitted access to NWD.
  - (1) Authorization for personnel to access any Sigma category will be granted only to individuals, not to organizations, functional groups, or position assignments (for example, access is not granted to *all* members of “XYZ Division” or to *all* “engineers”).
  - (2) Authorization for DOE or NNSA personnel to access any Sigma category, except Sigma 14, 15 or 20, will be granted in accordance with requirements of this Order and DOE M 471.X-Y and will be documented in the Weapons Data Access Control System (WDACS) within 1 working day after authorization is granted.
  - (3) Authorization for non-DOE/non-NNSA personnel to access any Sigma category will be granted in accordance with the requirements of this Order and DOE M 471.X-Y and will be documented in WDACS *before* the personnel access NWD.
- f. Foreign nationals may be granted access to NWD only as permitted under agreements for cooperation or as authorized by statutory determination, per the Atomic Energy Act, Sections 141 and 144.

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<sup>1</sup>Written or printed information; removable ADP media (diskettes, tapes, cards, etc.); charts; maps; paintings; drawings; engravings; sketches; photographic prints; exposed or developed film; working notes and papers; reproductions of such things by means or process; and sound and video recordings by magnetic, optical, or any other electronic means. (Source: DOE M 471.X-Y, Appendix E.)

- g. Existing NWD that has been marked as Sensitive Use Control Information will remain subject to accountability, control, handling, and storage requirements until it has been reviewed and re-marked in accordance with the requirements of this Order, the CRD and DOE M 471.X-Y.

5. RESPONSIBILITIES.

a. Administrator, NNSA.

- (1) Responsible for all policies and procedures to ensure that classified weapon information, also known as NWD, is appropriately protected and access is controlled in accordance with the Atomic Energy Act of 1954, as amended, chapter 12 (42 U.S.C. Sections 2161-2169).
- (2) Responsible for the exchange of NWD with other nations as permitted under agreements for cooperation and as authorized by statutory determinations per the Atomic Energy Act of 1954, as amended, Sections 141 and 144.

b. Chief, Defense Nuclear Security.

Responsible for control of access to classified weapons information per the Atomic Energy Act, Chapter 12 (42 U.S.C. Sections 2161-2169), as redelegated through the Director of the NNSA Service Center to the Manager of the Classified and Controlled Information Division (CCID).

c. Deputy Administrator, Defense Programs, NNSA.

- (1) Serves as senior technical advisor on NWD policy for the Administrator, NNSA.
- (2) Designates the Assistant Deputy Administrator for Military Application and Stockpile Operations as the executive agent for Sigma 20 NWD.

d. Assistant Deputy Administrator for Military Applications and Stockpile Operations.

- (1) Designates the Sigma 20 Program Coordinator (Sigma 20 PC).
- (2) In consultation with the Manager, CCID, approves or denies requests to deviate from requirements of this Order, the CRD and DOE M 471.X-Y for Sigma 20 NWD and responds to the requester with an interim or final decision within 30 days after the request is received from the NNSA Service Center.
- (3) In consultation with the Sigma 20 PC approves requests for transfer of Sigma 20 NWD to addresses outside the NNSA.

- (4) In consultation with the Sigma 20 PC approves requests from outside DOE and NNSA for access to Sigma 14 or 20 NWD.

e. Director, DOE Office of Security.

- (1) Coordinates with the Chief, Defense Nuclear Security (DNS); the Assistant Deputy Administrator for Military Applications and Stockpile Operations; and the Manager, CCID at the NNSA Service Center to ensure consistent, supporting security policies and procedures for authorizing access to NWD for—
  - (a) DOE employees and contractors outside the NNSA,
  - (b) employees and contractors of other Federal departments and agencies,
  - (c) members of Congress and their staffs, and
  - (d) members of the Supreme Court and their staffs.
- (2) In coordination with the Manager, CCID, maintains the Safeguards and Security Information Management System to designate those facilities and Agencies, authorized to receive, store, and conduct work with NWD.

f. Manager, Classified and Controlled Information Division, NNSA Service Center.

- (1) Manages the DOE/NNSA NWD program as delegated by the Chief, DNS.
- (2) As the office of primary interest, maintains this Order and DOE M 471.X-Y on behalf of the Chief, DNS.
- (3) Grants or denies waivers or deviation requests from the requirements of this Order, the CRD, or DOE M 471.X-Y, relating to Sigmas 1, 3, 3V, 4, 11, 12 and 13 material and responds to the requester with an interim or final determination within 30 days of request receipt by the NNSA Service Center.
- (4) Recommends to the Assistant Deputy Administrator for Military Applications and Stockpile Operations whether to grant or deny requests for waiver or deviation from the requirements of this Order, the CRD, or DOE M 471.X-Y relating to Sigma 20 material within 30 days of receiving a request.
- (5) Coordinates with the DOE Office of Security for certification of facilities and mail/shipping channels for transmitting NWD.

- (6) Approves Headquarters and contractor requests for documents verified as containing NWD from the Defense Technical Information Center (DTIC).
- (7) Develops and conducts programs to train employees on their NWD responsibilities.
- (8) Establishes and implements procedures for management oversight and periodic audits to evaluate the implementation status of this Order, the CRD and DOE M 471.X-Y.
- (9) Coordinates with the DOE Office of Congressional Affairs for access to NWD by members of Congress and congressional staff and maintains a current list of approved NWD recipients in Congress.
- (10) Forwards NWD to recipients in Congress through the Office of Congressional Affairs. (NOTE: Transmittals to Congress must be coordinated through the Office of Congressional Affairs.)

NOTE: Transfer of Sigma 20 outside the Nuclear Weapons Complex (NWC) must have prior approval from the Assistant Deputy Administrator for Military Applications and Stockpile Operations.

- (11) Establishes special caveat marking criteria to be used for NWD in addition to the markings prescribed in DOE M 471.2-1C, *Classified Matter Protection and Control Manual*, dated 4-17-01 (or its successor).
- (12) Coordinates the life-cycle management of scientific and technical NWD information produced by the NWC with the Office of Scientific and Technical Information (OSTI) in accordance with the requirements in DOE O 241.1A, *Scientific and Technical Information Management*, dated 4-9-01 (or its successor).
- (13) Transmits to OSTI (Oak Ridge)—
  - (a) all requests for documents containing NWD from DTIC and
  - (b) requests for field-of-interest registers.
- (14) Grants or denies access to nuclear weapon display vaults for representatives of other Government agencies and their contractors, members of Congress and their staffs, and other non-DOE/non-NSA requesters.

- (15) Using WDACS, provides authorization for the transfer of Sigma 1, 3, 4, 11, 12, or 13 NWD to personnel, Agencies and locations outside DOE and NNSA.

NOTE: Sigma 3V access authorization does not allow the transfer of NWD.

- (16) Grants, and records in WDACS, authorization to access Sigma 1, 3, 3V, 4, 11, 12, or 13 NWD for DOE and NNSA employees and contractors who are visiting Agencies or locations that are both non-NWC and non-DoD.
- (17) Grants, and documents in WDACS, authorization to access Sigma 1, 3, 3V, 4, 11, 12, or 13 NWD for employees and contractors that are both non-DOE and non-DoD. Organizations that are both non-DOE and non-DoD include—
  - (a) Government agencies and their contractors,
  - (b) foreign governments and international organizations, and
  - (c) Congress and congressional staff.
- (18) In coordination with the Sigma 20 PC, authorizes access to Sigma 20 NWD for DOE and NNSA employees and contractors visiting non-NWC Agencies or locations.

g. Heads of Headquarters Elements.

- (1) Designate from each DOE or NNSA program Secretarial Office one or more Sigma Access Authorization Officials who will approve, and record in WDACS, access to Sigmas 1, 3, 3V, 4, 11, 12, and 13 NWD for employees and contractors under their jurisdiction.
  - (a) Each Sigma Access Authorization Official or designee must be a Federal employee at grade GS-15 or above.
  - (b) The Office of the Assistant Secretary of Defense for Nuclear Matters, DoD, acting as a Headquarters element, also will designate a Sigma Access Authorization Official.
- (2) Ensure that the data in WDACS is correct and current for all personnel at DOE and NNSA Headquarters with access to any Sigma category NWD and for personnel in DoD and non-NWC field elements who have authorized access to Sigma 20 NWD.

- (3) Notify contracting officers for each affected site/facility management contract that the CRD for this Order (Attachment 2) is to be incorporated into site/facility management contracts under their jurisdiction.
- (4) Ensure that DOE and NNSA employees and contractors under their jurisdiction follow the requirements of this Order, the CRD, and DOE M 471.X-Y.
- (5) Coordinate access by or transfer to personnel outside DOE and NNSA of Sigmas 1, 3, 4, 11, 12 and 13 NWD with the Manager, CCID *before* transfer takes place.
- (6) Coordinate the transfer of Sigma 20 NWD outside DOE and NNSA with the Sigma 20 PC to obtain the approval of the Assistant Deputy Administrator for Military Application and Stockpile Operations *before* transfer takes place.
- (7) Ensure that documents in their custody containing Sigma 1, 3, 4, 11, 12, or 13 NWD are transmitted to other DOE or NNSA entities only after it is verified that the recipient has—
  - (a) a valid need to know,
  - (b) appropriate security clearance,
  - (c) access authorization for the appropriate Sigmas as documented in WDACS, and
  - (d) appropriate site clearance and storage capability recorded in the Safeguards and Security Information Management System.

h. NNSA Headquarters Sigma 20 Program Coordinator (Sigma 20 PC).

- (1) Serves as the program coordinator for implementation of the requirements of this Order, the CRD and DOE M 471.X-Y pertaining to Sigma 20 NWD.
- (2) Serves as point of contact for interaction involving Sigma 20 NWD with organizations and Agencies outside NNSA.
- (3) Confirms, in writing, nominations of DOE and NNSA Sigma 20 Site Coordinators (Sigma 20 SCs).
- (4) Maintains a current listing of Sigma 20 SCs and periodically distributes a consolidated listing to the Sigma 20 SCs and others, as required.



- (5) Ensures that WDACS data is correct and current for DOE and NNSA Headquarters personnel and for non-DOE and/or non-NNSA personnel that have authorized access to Sigma 20 NWD.
- (6) Serves as point of contact for Sigma 20 NWD handling issues.
- (7) Develops policy and procedures in coordination with the Manager, CCID and other appropriate organizations to consistently identify, categorize and protect Sigma 20 NWD.
- (8) Ensures DOE and NNSA Headquarters compliance with these procedures.
- (9) Ensures that all personnel who have authorized access to Sigma 20 NWD have sufficient training, awareness, and knowledge of procedures for protecting such information.
- (10) Develops a written plan and memorandums of agreement for implementing these procedures at DOE Headquarters.
- (11) Coordinates the Assistant Deputy Administrator for Military Application and Stockpile Operations' approval of access to and/or transfer of Sigma 20 NWD to DoD and other Government agencies and documents this approval in WDACS.
- (12) Approves access to Sigma 20 NWD for
  - (a) DOE and NNSA Headquarters employees and contractors,
  - (b) non-NNSA Departmental field personnel, and
  - (c) DOE or NNSA personnel in organizations that do not have a Sigma 20 SC.

i. Heads of Field Elements (DOE/NNSA/DoD).

- (1) Designate from each field element one or more Sigma Access Authorization Officials who will approve, and record in WDACS, access to Sigmas 1, 3, 3V, 4, 11, 12, and 13 NWD for employees and contractors under their jurisdiction.
  - (a) Each Sigma Access Authorization Official or designee must be a Federal employee at grade GS-15 or above or equivalent.
  - (b) Heads of major commands, DoD, acting as field elements also will designate Sigma Access Authorization Officials.

- (2) Ensure that the data in WDACS is correct and current for all personnel under their jurisdiction who have authorized access to Sigmas 1, 3, 3V, 4, 11, 12 or 13 NWD.
- (3) Ensure that employees and contractors under their jurisdiction can identify NWD in documents and verify that they are marked properly.
- (4) Ensure that NWD is disseminated only to individuals with appropriate clearance, Sigma access authorization, and valid need to know.
- (5) Forward nominations for Use Control Facility Coordinators to the Headquarters Use Control Program Coordinator and maintain copies of confirmation letters.
- (6) Forward Sigma 20 SC nominations to the Headquarters Sigma 20 PC and maintain copies of confirmation letters.
- (7) Coordinate with OSTI to provide appropriate life-cycle management of scientific and technical NWD produced under their jurisdiction in accordance with the requirements DOE O 241.1A.

j. Sigma 20 Site Coordinators.

- (1) Serve as points of contact for Sigma 20 NWD handling issues.
- (2) Coordinate procedures with knowledgeable classification authorities (the local classification office or CCID) to identify and categorize Sigma 20 NWD consistently.
- (3) Coordinate site plans with appropriate field organizations and the Sigma 20 PC.
- (4) Ensure site compliance with plans and procedures.
- (5) Support the reporting process for lost or compromised Sigma 20 documents in accordance with DOE N 471.3 or its successor and notify the Sigma 20 PC.
- (6) Coordinate with the Sigma 20 PC to authorize access to Sigma 20 NWD for DOE and NNSA employees and contractors at their sites.
- (7) Coordinate with the Sigma 20 PC for authorization to transfer Sigma 20 NWD to personnel, Agencies, and locations outside DOE and NNSA.
- (8) Ensure that personnel authorized to access Sigma 20 NWD have sufficient training, awareness, and knowledge of procedures for protecting information.

- (9) Ensure that WDACS data is correct and current for all site personnel who have authorized access to Sigma 20 NWD.
- k. Managers of NNSA Headquarters and Site Offices. In addition to the responsibilities and authorities described in paragraphs 5g and 5i, above, grant access to weapon vaults located at their sites for DOE/NNSA personnel and contractor staff that have appropriate clearances, confirmed Sigma access authorizations, and valid need to know.

NOTE: The authority to grant access to weapon vaults may be redelegated in writing to a limited number of contractor senior management at the site.

l. Director, Office of Scientific and Technical Information, Oak Ridge.

NOTE: OSTI is part of the Office of Science, not a DOE/NNSA organization and not part of the NWC per DOE 5600.1, *Management of the Department of Energy Weapon Program and Weapon Complex*, dated 6-27-79, or 50 U.S.C. 2471. For the purposes of NWD and scientific and technical information management and control, OSTI has the same access privileges as organizations that are part of NNSA.

- (1) Collects and maintains a repository for scientific and technical NWD information originated by DOE/NNSA offices and their contractors and by DoD offices and their contractors (if the DoD information is pertinent to DOE/NNSA national defense missions).
- (2) Provides abstracting and indexing services for scientific and technical NWD.
- (3) Maintains computerized NWD databases, which are made available to authorized users through approved and accredited remote encrypted telecommunications links (e.g., National Security Agency Types I and II).
- (4) Coordinates with CCID requests from site offices and their contractors to establish field-of-interest registers of NWD documents obtained from DTIC.
- (5) Arranges to obtain NWD documents from DTIC for authorized DOE/NNSA personnel.
- (6) Establishes a field-of-interest register for NWD documents that DOE/NNSA requests from DTIC.
- (7) With approval from CCID and others, grants access to NWD and transmits NWD documents from OSTI's custody to Departmental offices and their

contractors and to other Government agencies and their contractors in accordance with requirements of this Order.

- (8) Assists CCID in implementing policies and procedures for the management of Department-sponsored scientific and technical information containing NWD.

NOTE: Policy for the OSTI/DTIC database management agreement falls under the auspices of the Joint Coordinating Committee.

m. Sigma Access Authorization Officials.

- (1) Document site employees and contractors who have been granted access to Sigma 1, 3, 3V, 4, 11, 12, or 13 NWD, and confirm that they have—
  - (a) appropriate clearance and
  - (b) need to know validated by an appropriate official.
- (2) Ensure that WDACS data is correct and current for site employees and contractors that are authorized access to Sigma 1, 3, 3V, 4, 11, 12, or 13 NWD.
- (3) Ensure that site employees and contractors who are authorized access to Sigma 1, 3, 3V, 4, 11, 12, or 13 NWD have sufficient training, awareness, and knowledge of procedures for protecting NWD.

n. Persons Authorized Sigma Access. Will disseminate or distribute NWD only to personnel with the appropriate clearance, authorized sigma access and validated need to know in accordance with the requirements of this Order, the CRD and DOE M 471.X-Y.

NOTE: DOE and NNSA personnel authorized Sigma access for Sigmas 1, 3, 3V, 4, 11, 12, or 13 NWD may grant *initial* access to one or more of the Sigma categories that they are authorized to access for DOE or NNSA personnel with the appropriate clearance and validated need to know but must report this initial access to the Sigma Access Authorization Official of the organization granting the initial access for entry into WDACS within 1 business day after approving access.

o. Contracting Officers. Following notification from the responsible DOE or NNSA program Secretarial Office, incorporate the CRD into affected site/facility management contracts via the laws, regulations, and DOE directives clause of the contracts.

6. SIGMA SYSTEM MANAGEMENT.

a. Revisions.

- (1) An organization may submit revision recommendations to the Sigma system to the Manager, CCID, at any time.
- (2) Recommendations may concern Sigma category definitions, access controls, handling, dissemination requirements, and adding a new or deleting an existing Sigma.

b. Deviations.

All requests for waiver or deviation from requirements of this Order, the CRD (Attachment 2), or DOE M 471.X-Y, must be submitted in writing to the Manager, CCID, from the site office manager, laboratory director, head of field element, or higher authority.

- (1) A request should include a description of and justification for the deviation.
- (2) The Manager, CCID, will evaluate the request and respond with an interim or final decision within 30 days.

7. REFERENCES.

- a. Public Law (P.L.) 83-703, the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011).
- b. P.L. 106-65, the National Defense Authorization Act for Fiscal Year 2000, Section 3201, the National Nuclear Security Administration Act, 50 U.S.C. 2401.
- c. DOE O 241.1A, *Scientific and Technical Information Management*, dated 4-9-01.
- d. DOE O 470.1, *Safeguards and Security Program*, dated 9-28-95.
- e. DOE O 471.2A, *Information Security Program*, dated 3-27-97.
- f. DOE M 471.2-1B, *Classified Matter Protection and Control Manual*, dated 1-6-99. (NOTE: Only Chapter III, paragraphs 1 and 2, and Chapter IV are still in effect.)
- g. DOE M 471.2-1C, *Classified Matter Protection and Control Manual*, dated 4-17-01.
- h. DOE N 471.3, *Reporting Incidents of Security Concern*, dated 4-13-01.

- i. DOE 5632.1C, *Protection and Control of Safeguards and Security Interests*, dated 7-15-94.

8. IMPLEMENTATION.

Requirements of this Order must be implemented as soon as possible and consistent with contractual requirements. Organizations that cannot fully implement the new requirements imposed by this Order within 1 year of publication or within their existing resources must develop and submit an implementation plan to the Manager, CCID, within 6 months of publication of this Order.

9. CONTACT. Questions concerning this Order should be addressed to the NNSA Service Center, Classified and Controlled Information Division, Albuquerque, NM, 505-845-4381.

BY ORDER OF THE SECRETARY OF ENERGY:

(DOE seal)

KYLE E. McSLARROW  
Deputy Secretary

**DEPARTMENT OF ENERGY ORGANIZATIONS TO WHICH  
DOE O 471.X, *Control of and Access to Nuclear Weapon Data*, IS APPLICABLE**

Office of the Secretary  
Office of the Chief Information Officer  
Office of Civilian Radioactive Waste Management  
Office of Congressional and Intergovernmental Affairs  
Office of Counterintelligence  
Departmental Representative to the Defense Nuclear Facilities Safety Board  
Office of Economic Impact and Diversity  
Office of Electric Transmission and Distribution  
Office of Energy Assurance  
Office of Energy Efficiency and Renewable Energy  
Energy Information Administration  
Office of Environment, Safety and Health  
Office of Environmental Management  
Office of Fossil Energy  
Office of General Counsel  
Office of Hearings and Appeals  
Office of Independent Oversight and Performance Assurance  
Office of Inspector General  
Office of Intelligence  
Office of Management, Budget and Evaluation and Chief Financial Officer  
National Nuclear Security Administration  
Office of Nuclear Energy, Science and Technology  
Office of Policy and International Affairs  
Office of Public Affairs  
Office of Science  
Secretary of Energy Advisory Board  
Office of Security  
Office of Worker and Community Transition  
Albuquerque Operations Office  
Bonneville Power Administration  
Southeastern Power Administration  
Southwestern Power Administration  
Western Area Power Administration

**CONTRACTOR REQUIREMENTS DOCUMENT**  
**DOE O 471.X, *Control of and Access to Nuclear Weapon Data***

This Contractor Requirements Document (CRD) establishes requirements for Department of Energy (DOE) and National Nuclear Security Administration (NNSA) contractors that must be incorporated into their contracts and subcontracts as a condition for contractor/subcontractor employees to use Government resources.

Regardless of the performer of the work, the contractor is responsible for complying with the requirements of this CRD. The contractor is responsible for flowing down the requirements of this CRD to subcontractors at any tier to the extent necessary to ensure the contractor's compliance with the requirements. In doing so, the contractor must not flow down requirements to subcontractors unnecessarily or imprudently. That is, the contractor will ensure that it and its subcontractors comply with the requirements of this CRD and incur only those costs that would be incurred by a prudent person in the conduct of competitive business.

**REQUIREMENTS.**

1. DOE contractors with the CRD incorporated into their contracts must comply with the requirements of—
  - a. DOE O 471.X, *Control of and Access to Nuclear Weapon Data*, dated XX-XX-03;
  - b. DOE M 471.X-Y, *Control of and Access to Nuclear Weapon Data*, dated XX-XX-03; and
  - c. all other applicable rules, regulations, and directives.
2. All nuclear weapon data (NWD) must be marked with the appropriate Sigma category as specified in this CRD, including NWD that—
  - a. originated within DOE or NNSA;
  - b. is identified and/or retained in any DOE or NNSA organization; or
  - c. is transmitted to another department, agency, or branch of the U.S. Government, a non-Government organization, or a U.S. Government contractor after the approval date of this CRD. [See DOE O 471.X and DOE M 471.X-Y.]
3. The following exceptions apply.
  - a. NWD that is inactive when this CRD is approved does not require review or re-marking for as long as it remains inactive.



- b. Inactive NWD that is accessed infrequently for purposes such as inventory will continue to be considered inactive.
- 4. When inactive NWD is retrieved for use, it must be reviewed and re-marked to reflect requirements of this CRD.
- 5. NWD documents that originated in DOE or NNSA and that are transmitted to the Department of Defense (DoD) must also be marked Critical Nuclear Weapons Design Information if required by criteria established by DoD. (See DOE M 471.X-Y, Appendix E.)
- 6. Only individuals with the appropriate clearance, a valid need to know, and documented Sigma access authorization will be permitted access to any category of NWD.
- 7. Authorization to access any Sigma category documented in the Weapon Data Access Control System will be granted on an individual basis, not to organizational/functional groups or position assignments (for example, access will not be granted to *all* members of “XYZ Division” or to *all* “engineers”).
- 8. Foreign nationals may be granted access to U.S. Government NWD only as authorized under agreements for cooperation and statutory determinations.
- 9. Existing NWD marked as Sensitive Use Control Information will remain subject to all accountability, control, handling, and storage requirements until the data is reviewed and re-marked in accordance with the requirements of this CRD.

## **SIGMA CATEGORIES**

<b><u>SIGMA</u></b>	<b><u>TITLE AND DEFINITION</u></b>
<b>Sigma 1</b>	<b>DESIGN AND THEORY OF OPERATION</b>  Theory of operation (hydrodynamic and nuclear) or complete or partial design of thermonuclear weapons or fission weapons or their unique components; includes the high explosive system with detonators and firing unit, fissile material or pit system, and nuclear initiation system.
<b>Sigma 2<sup>1</sup></b>	Obsolete after publication of DOE O 471.X. Sigma 2 labeling for materials formerly identified as Sigma 2 nuclear weapon data (NWD) will become Sigma 1 NWD.
<b>Sigma 3</b>	<b>MANUFACTURING AND UTILIZATION INFORMATION</b>  Manufacturing and utilization information that does not comprehensively reveal the theory of operation or design of the physics package.  Utilization information necessary to support the stockpile-to-target sequence.  Complete or partial design and operation of non-nuclear components but only as prescribed below for nuclear components: <ul style="list-style-type: none"><li>• general external weapon configuration of reentry bodies/vehicles, bomb cases, ballistic cases, and aero shells;</li><li>• environmental behavior, fusing, ballistics, yields, and effects;</li><li>• nuclear components or subassemblies that do not reveal theory of operation or significant design features;</li><li>• production and manufacturing techniques applied to nuclear parts or subassemblies; and</li><li>• anticipated and actual strike operations.</li></ul> Stockpile quantities or production rates of nuclear weapons including production rates and/or stockpile quantities of nuclear weapon components which reveal stockpile quantities or production rates of nuclear weapons.

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<sup>1</sup> Material marked Sigma 2 must be reviewed and re-marked if retrieved from file/storage for use.

General studies not directly related to the design or performance of specific weapons or weapon systems, including studies of reliability, fusing, damage, aerodynamics, etc.

Chemistry, metallurgy, and processing of materials peculiar to the field of atomic weapons or nuclear explosive devices.

**Sigma 3V**

**VISUAL**

**Visual only** access to assemblies, components, materials, and/or processes that contain Sigma 3 NWD; does not authorize discussion or explanation of the product, process, material, or component.

**Sigma 4**

**NUCLEAR WEAPON AND NUCLEAR EXPLOSIVE DEVICE TESTING**

Information inherent in pre-shot and post-shot activities necessary for testing atomic weapons or devices, including—

- logistics, administration, and other agency participation;
- special construction and equipment;
- effects, safety;
- purpose of test;
- general nature of nuclear explosive tested (including expected or actual yields); and
- conclusions derived from test, not to include theory of operation or design information.

EXCLUDED: Specifically *excluded* are theory of operation and design of such test devices.

**Sigma 5<sup>2</sup>**

Obsolete after publication of DOE O 471.X. Labeling for documents formerly identified as Sigma 5 NWD will become Sigma 3.

**Sigma 6<sup>3</sup>**

**No longer used.**

**Sigma 7<sup>3</sup>**

**No longer used.**

**Sigma 8<sup>3</sup>**

**No longer used.**

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<sup>2</sup> Material marked Sigma 5 must be reviewed and re-marked if retrieved from file/storage for use.

<sup>3</sup> Informal recognition/use ended with publication of DOE Order 5610.2 in August 1980.

- Sigma 9**<sup>4</sup>      Obsolete after publication of DOE O 471.X. Labeling for documents formerly identified as Sigma 9 NWD will become Sigma 3 NWD.
- Sigma 10**<sup>5</sup>      Obsolete after publication of DOE O 471.X. Labeling for documents formerly identified as Sigma 10 NWD will become Sigma 3 NWD.
- Sigma 11**      **INERTIAL CONFINEMENT FUSION TECHNOLOGY**
- Information concerning inertial confinement fusion that reveals or is indicative of weapon data.
- Sigma 12**      **NUCLEAR DIRECTED ENERGY WEAPON DESIGN**
- Complete theory of operation or design or partial design information revealing either sensitive design features or how energy conversion takes place for the nuclear energy converter, energy director, or other nuclear directed energy weapon systems or components outside the envelope of the nuclear source but within the envelope of the nuclear directed energy weapon.
- Sigma 13**      **NUCLEAR DIRECTED ENERGY WEAPON EFFECTS**
- Manufacturing and utilization information and output characteristics for nuclear energy converters, directors, or other nuclear directed energy weapon systems or components outside the envelope of the nuclear source, not comprehensively revealing the theory of operation, sensitive design features of the nuclear directed energy weapon, or how the energy conversion takes place. Information includes—
- general, external weapon configuration and environmental behavior characteristics, yields, and effects;
  - component or subassembly design that does not reveal complete theory of operation or significant comprehensive design features of nuclear directed energy weapons; and
  - production and manufacturing techniques related to components or subassemblies of nuclear directed energy weapons.

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<sup>4</sup>Material marked Sigma 9 must be reviewed and re-marked if retrieved from file/storage for use.

<sup>5</sup>Material marked Sigma 10 must be reviewed and re-marked if retrieved from file/storage for use.

**Sigma 14                      USE CONTROL VULNERABILITIES**

Sensitive information concerning the vulnerability of nuclear weapons to deliberate unauthorized detonation.

**Sigma 15                      USE CONTROL SYSTEMS**

Sensitive information concerning nuclear weapons design and function of nuclear weapon use control systems, features, and components; includes use control information for passive and active systems.

**Sigmas 16-19                Not currently in use.**

**Sigma 20                      CRUDE OR SIMPLE IMPROVISED NUCLEAR DEVICE  
CONCEPTS AND DESIGNS**

A specific subset of Sigma 1 NWD that pertains to crude or simple improvised nuclear device (IND) concepts or designs. Sigma 20 concepts and designs reveal significant design “shortcuts” that greatly enhance an adversary’s ability to construct a crude nuclear weapon. Generally, IND concepts or designs not requiring Sigma 20 protection include those based on—

- present or former unmodified stockpile weapons,
- approved yet never deployed military designs,
- nuclear explosive devices used within the U.S. testing program, and
- unmodified foreign stockpile weapons.